# CC HUAWEI eSight 20.1.0 -Security Target

**Issue** 2.1

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# About This Document

## Change History

| Version | Date | Change Description | Author |
|---|---|---|---|
| V1.0 | 2021-8-16 | Initial Draft | Lv Huimin, Rao Lei，Sun Zhenxing，Ding Qianbin |
| V1.1 | 2021-09-06 | Modify the issue in the action item list | Lv Huimin, Rao Lei，Ding Qianbin |
| V1.2 | 2021-09-27 | Modify the issue in the action item list | Lv Huimin |
| V1.3 | 2021-10-14 | Modify the AGD document version to V0.4 | Lv Huimin |
| V1.4 | 2021-10-14 | Close the issue in the action item list 211008 | Lv Huimin |
| V1.5 | 2021-11-18 | Close the issue in the action item list 211105 | Rao Lei |
| V1.6 | 2021-11-30 | Close the issue in the action item list 211129 | Lv Huimin ,Rao Lei |
| V1.7 | 2021-12-24 | Remove “eSight_20.1.0_EulerOS-x86-64.iso”, “eSight_20.1.0_Deploy_x86-64.zip”, and “eSight_20.1.0_OSConfigurationTool.zip” from the TOE scope | Lv Huimin |
| V2.0 | 2022-01-14 | Close the issue in the action item list 20220110 | Lv Huimin |
| V2.1 | 2022-03-17 | Remove unnecessary description of deployment scenarios that are not in scope | Lv Humin |

# Contents



# 1 Introduction

This Security Target is for the evaluation of HUAWEI eSight.

## 1.1 ST Reference

Title: CC HUAWEI eSight 20.1.0 -Security Target

Version: V2.1

Author: Huawei Technologies Co., Ltd.

Publication date: 2022-03-17

## 1.2 TOE Reference

TOE name: HUAWEI eSight

TOE version: 20.1.0

TOE Developer: Huawei Technologies Co., Ltd.

TOE release date: 2021-7-15

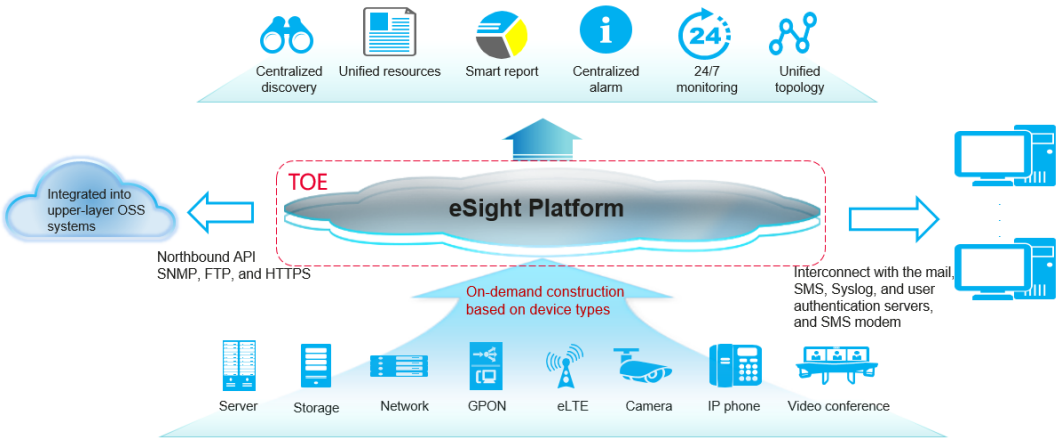
## 1.3 TOE Overview

ESight is an integrated O&M management solution for enterprises. It centrally manages servers, storage devices, switches, routers, and firewalls and provides a diverse range of functions for enterprise ICT infrastructure, such as automatic configuration and deployment, visualized fault diagnosis, and intelligent capacity analysis. eSight helps enterprises improve O&M efficiency, reduce O&M costs, improve resource utilization, and ensure stable operation for enterprise ICT systems.

As shown in Figure 1-1, eSight is located at the O&M of the ICT infrastructure:

**Figure 1-1** eSight network positioning




The core and base of eSight is the CloudSOP platform.

The CloudSOP platform provides the basic framework for OSS application deployment, monitoring and secondary development, as well as public services, such as user management, rights management, session management, log management, license management, alarm management, and topology management. The architecture of CloudSOP is highly reliable, flexible, open, and easy to be integrated, meeting the requirements from future OSS large-scale distributed clusters.

## 1.3.1 TOE Usage and Major Security Features

ESight uses the micro-service framework. Based on the management scale and reliability requirements, eSight can be deployed in a single-node system or in a cluster. Provides open interfaces for interconnection and integration with upper-layer OSS or third-party systems. Simplified, automated, and intelligent O&M improve O&M efficiency, helping customers reduce O&M costs and improve O&M experience.

The major security features of eSight that are subject to evaluation are:

1. User management
2. Authentication
3. Access control
4. Communication security
5. User session management
6. Auditing
7. Security management function
8. Cryptographic functions

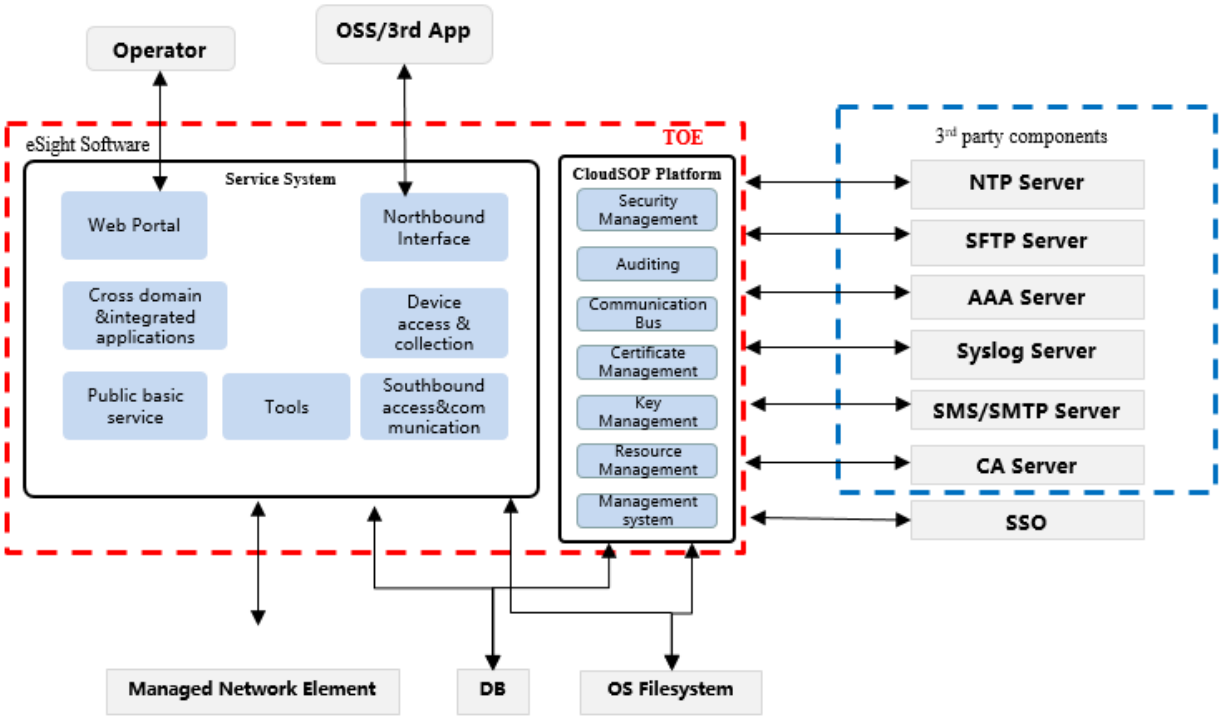
## 1.3.2 TOE Type

- The TOE is a software system for cloud network management. The TOE is located at the management and control layer of the cloud-based network. It can manage and control ubiquitous network devices, including transport, IP, and access devices. It provides open interfaces to quickly integrate with upper-layer application systems such as OSSs, service orchestrators and service applications. Various apps can be developed and customized to accelerate service innovation and achieve e-commerce-style operations.

- eSight is a cloud-based system that uses a service-oriented software architecture.
- Based on the cloud platform, eSight implements three logical modules (network management, network control, and network analysis) and various scenario-oriented applications as services and components. This allows customers to deploy eSight in a flexible and modular manner to meet their specific requirements.
- The eSight software architecture is shown in Figure 1-2. In the northbound direction, it provides Web portals and northbound interfaces for O&M personnel, OSS. In the southbound direction, it provides configuration and management capabilities for Huawei network devices and provides third-party driver management to manage third-party network elements outside the trusted zone. The system also interconnects with external NTP servers, SFTP servers, AAA authentication servers, Syslog servers, CA servers and SMS/SMTP servers.

**Figure 1-2** TOE overview




## 1.3.3 Non-TOE Hardware and Software

eSight can be deployed in a single-node system (all functions are deployed on one server), a two-node cluster (all functions are deployed on two servers), or a multi-node cluster. The network architecture can be in a single-plane (all network access are deployed in the same network plane) or a dual-plane configuration (all network access are deployed in different network planes).

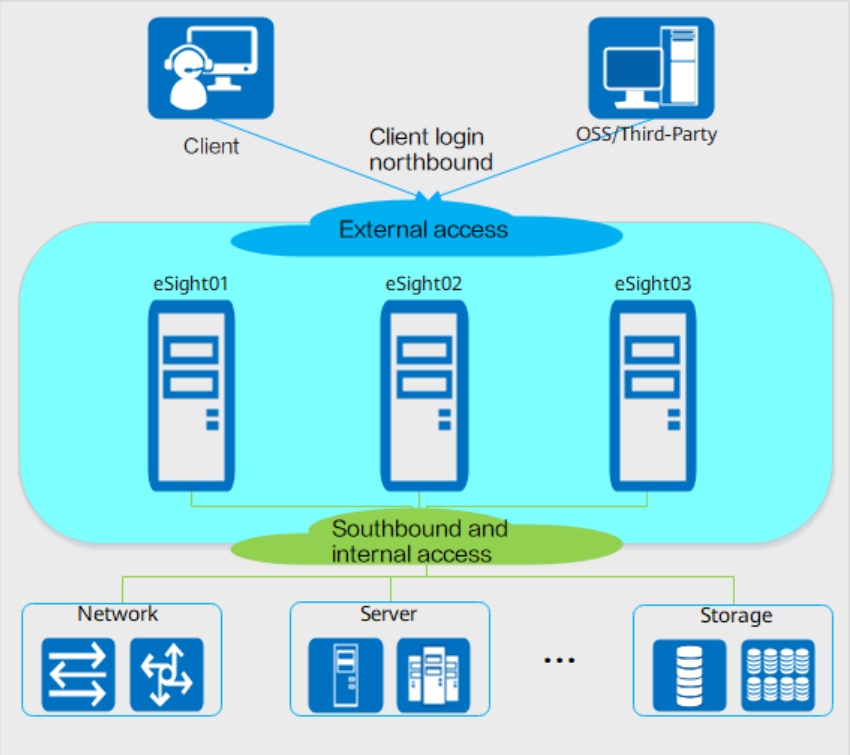
Only the multi-node cluster and dual-plane deployment mode is in scope of the TOE.

In a cluster, all eSight functions are deployed on multiple servers. Each server is a node. At least three nodes are required.

This mode is applicable to scenarios where the network scale is large and the reliability requirement is high. Figure 1-3 shows the networks architecture.

**Figure 1-3** eSight cluster network architecture




In this mode, eSight supports single-plane and dual-plane deployment.

- Single-plane deployment: External access, internal communication, and southbound device management functions of eSight are deployed on the same network plane.
- Dual-plane deployment: The external access network, internal communication network, and southbound access network are deployed on two network planes. In this configuration, the internal communication network and southbound access network is deployed on the same network plane and the external access network is deployed on the other network plane.

NOTE

- The SBI Support IP address trustlist, Only managed devices(When adding a device, it is added to the white list by default) can access the southbound module

eSight has specific requirements on the hardware, software and client to ensure the stable running of the system.

## Hardware Configurations for eSight:

**Table 1-1** Configuration requirements for eSight server deployment on physical machines

| Management Capability | Server Configuration | Delivered Server | Software Configuration (Including the Operating System and Database) |
|---|---|---|---|
| Basic devices: 0 to 5000 | CPU: 12-core, 2 GHz or higher | x86: 02312SEH<br>TaiShan 200: | EulerOS + GaussDB |

| Management Capability | Server Configuration | Delivered Server | Software Configuration (Including the Operating System and Database) |
|---|---|---|---|
| | Memory: 64 GB<br>Hard disk: 500 GB | 02312RLX | |
| Basic devices: 5001 to 20,000 | CPU: 40-core, 2 GHz or higher<br>Memory: 128 GB<br>Hard disk: 1 TB | x86: 02312SEJ<br>TaiShan 200: 02312RLY | EulerOS + GaussDB |

NOTE

- Bandwidth between the eSight server and devices: 50 Mbit/s is recommended.
- Bandwidth between the eSight server and web client: 10 Mbit/s is recommended.
- Network KPIs: The network delay is less than 30 ms. The packet loss rate is less than 0.1%.
- Reliability replication bandwidth between eSight nodes: 100 Mbit/s is recommended.
- The disk I/O rate is greater than or equal to 50 MB/s. The recommended rate is 100 MB/s. The disk IOPS is greater than or equal to 200.

  Log in to the server as the **root** user and run the following command to check the I/O rate:

  **dd if=/dev/zero of=/opt/test1.speed.dbf bs=8k count=10000 conv=fdatasync oflag=direct**
- eSight server configuration resources must be exclusively used.

## Required non-TOE software packages

**Table 1-2** Software packages

| Software | Software Package | Digital Signature File |
|---|---|---|
| EulerOS image | eSight_20.1.0_EulerOS-x86-64.iso | eSight_20.1.0_EulerOS-x86-64.iso.asc |
| eSight deployment tool software | eSight_20.1.0_Deploy_x86-64.zip | eSight_20.1.0_Deploy_x86-64.zip.asc |
| eSight OS configuration and commissioning tool | eSight_20.1.0_OSConfigurationTool.zip | eSight_20.1.0_OSConfigurationTool.zip<br>.asc |

## Configuration for the eSight Client

**Table 1-3** Client configuration requirements

| Type | Requirements |
|---|---|
| PC | Minimum configuration: |

| Type | Requirements |
|---|---|
| | • CPU: 2 cores, 2.6 GHz<br>• Memory: 4 GB<br>• Hard disk: 8 GB<br>Recommended configuration:<br>• CPU: 4 cores, 3.1 GHz<br>• Memory: 8 GB<br>• Hard disk: 8 GB |
| Cloud Desktop | Minimum configuration:<br>• CPU: 4 cores, 2.6 GHz<br>• Memory: 4 GB<br>• Hard disk: 8 GB<br>Recommended configuration:<br>• CPU: 6 cores, 3.1 GHz<br>• Memory: 8 GB<br>• Hard disk: 8 GB |
| OS | • Windows 10 (32-bit or 64-bit) |
| Web browser | • Google Chrome 57 or later (32-bit or 64-bit)<br>• Firefox ESR 52 or later (32-bit or 64-bit) |
| Resolution | 1366 x 768 px or higher; recommended resolution: 1920 x 1080 px<br>• Zoom ratio of the browser: 100% is recommended and 80% to 200% is compatible.<br>• If the resolution is within the compatibility scope of the browser, functions are available but the layout may not be user-friendly. If the resolution is not within the compatibility scope of the browser, both the functions and layout are affected. |

Except the server, OS and DB as described above, the environment for TOE also comprises the following components:

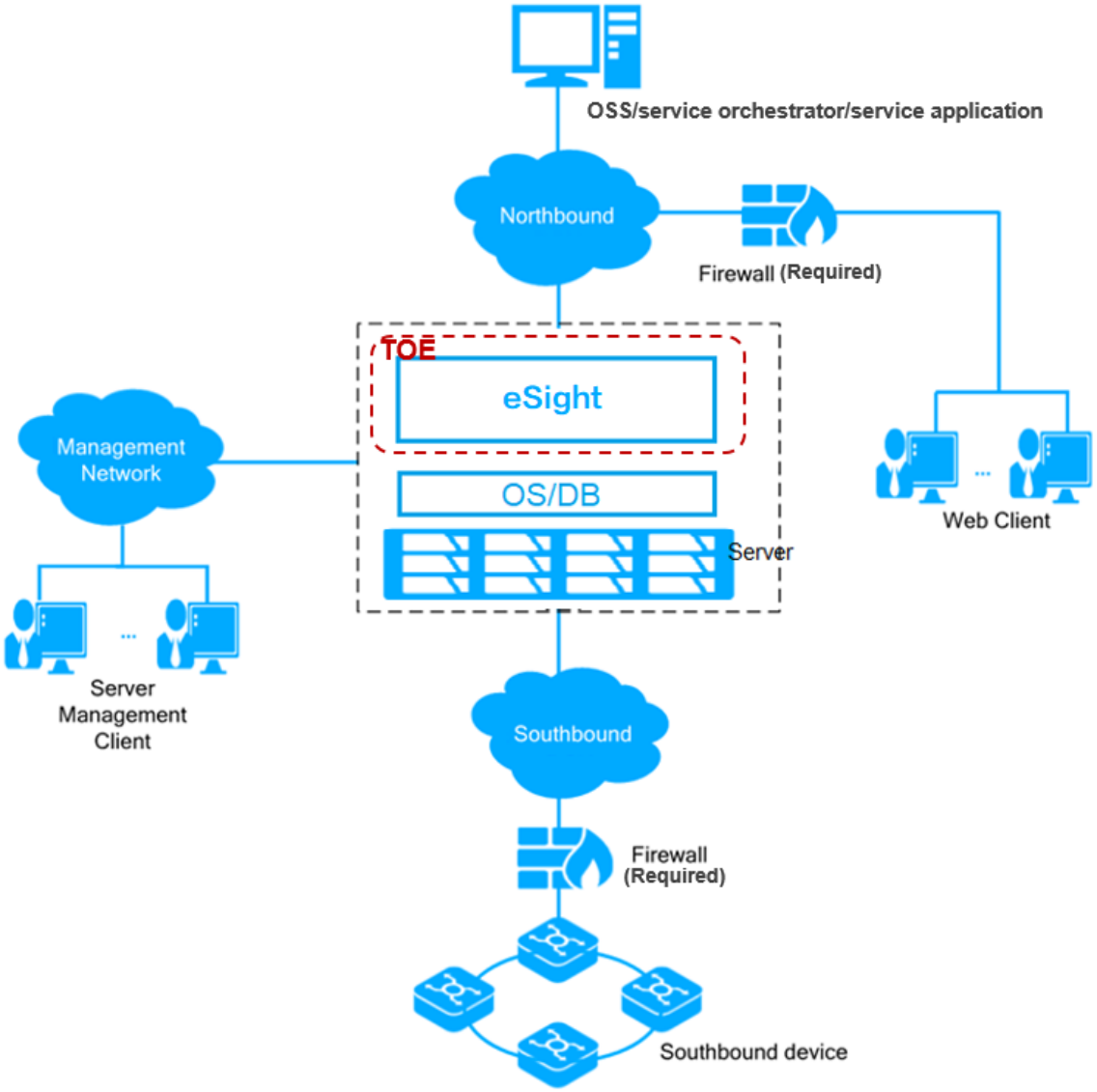
**Table 1-4** Environment components

| Component | Required/ Optional | Usage/Purpose Description for TOE Performance |
|---|---|---|
| Firewall | Required | Firewall used by customers to ensure communication security between different communication planes. |
| Network Elements (NEs) | Required | NEs that are managed by the TOE and support different communication protocols with the TOE. |
| Web portal, OSSs, | Required | The web portal connects to the TOE using HTTPS. And the OSSs, service orchestrators and service applications that connect to the TOE through external interfaces including |

| Component | Required/ Optional | Usage/Purpose Description for TOE Performance |
|---|---|---|
| service orchestrators and service applications | | SNMPv3, SFTP, and some customized RESTful interfaces. |
| AAA server | Optional | The external AAA server used to authenticate users. The TOE can correctly leverage the services provided by this AAA server to authenticate administrators.<br>The security mechanisms for remote LDAP/RADIUS authentication depend on the third-party AAA server. Security mechanisms, such as anti-brute force cracking, password complexity check, and anti-DoS attack, must be enabled on the third-party server. Especially the communication channel between TOE and RADIUS server should be protected. |
| Syslog server | Optional | Syslog server used to transmit syslog messages. |
| SFTP server | Optional | SFTP server used to upload performance files and back up NE data. |
| SMS/SMTP server | Optional | eSight sends notifications by emails or messages. |
| CA server | Optional | CA server can apply for a certificate, update the certificate, and publish the CRL certificate revocation list (CRL) file. |
| NTP server | Optional | NTP server is used to sync the time of the eSight server. |
| EasySuite | Required | EasySuite used to install and deploy eSight. The tool, which is managed by a single user, encrypts sensitive information such as passwords for storage and protection, protects the software package against tampering through digital signature verification, and ensures the security of the tool using the EasySuite security mechanism.<br>eSight is installed using EasySuite and security hardening is performed on EulerOS by default, including OS account and password security, system service/component minimization, file/directory permission minimization, authentication and authorization, kernel parameter security, and system log audit. For details, see the AGD document. EulerOS itself is not included in the TOE. |

Figure 1-4 shows the physical environment of eSight,Figure 1-4 which is the typical environment.

**Figure 1-4** TOE physical environment




# 1.4 TOE Description

## 1.4.1 TOE Definition Scope

This section will define the scope of the eSight to be evaluated. eSight can be deployed in a single-node system, a two-node cluster, or a multi-node cluster. For details about the configuration specifications for the three modes, see 1.3.3 Non-TOE Hardware and Software.

### 1.4.1.1 Physical Scope

The TOE is a software to be installed on a specified hardware server that does not contain any hardware itself. The servers, OSs, and databases make up the TOE environment to meet the security requirements.

Users can log in to the HUAWEI support website to download the software packet in accordance to the version of the TOE. Users can verify the software by digital signature (The digital signature is also published on the HUAWEI support website).

eSight software package consists of binary compressed files. The following software packages and documents are required and are part of the TOE.

eSight can be deployed in different modes (see section 1.3.3 ). Only the multi-node cluster and dual-plane deployment mode is in scope of the TOE.

**Table 1-5** Software packages

| Software | Software Package | Digital Signature File |
|---|---|---|
| eSight installation software | eSight_20.1.0_x86-64.zip | eSight_20.1.0_x86-64.zip.asc |

Users can log in to the HUAWEI support website to read the document directly or download the product documentation in accordance with the version of the TOE. The download file formats are *.hdx and *.docx, user can download the *.hdx reader from the same website.

**Table 1-6** TOE guidance list

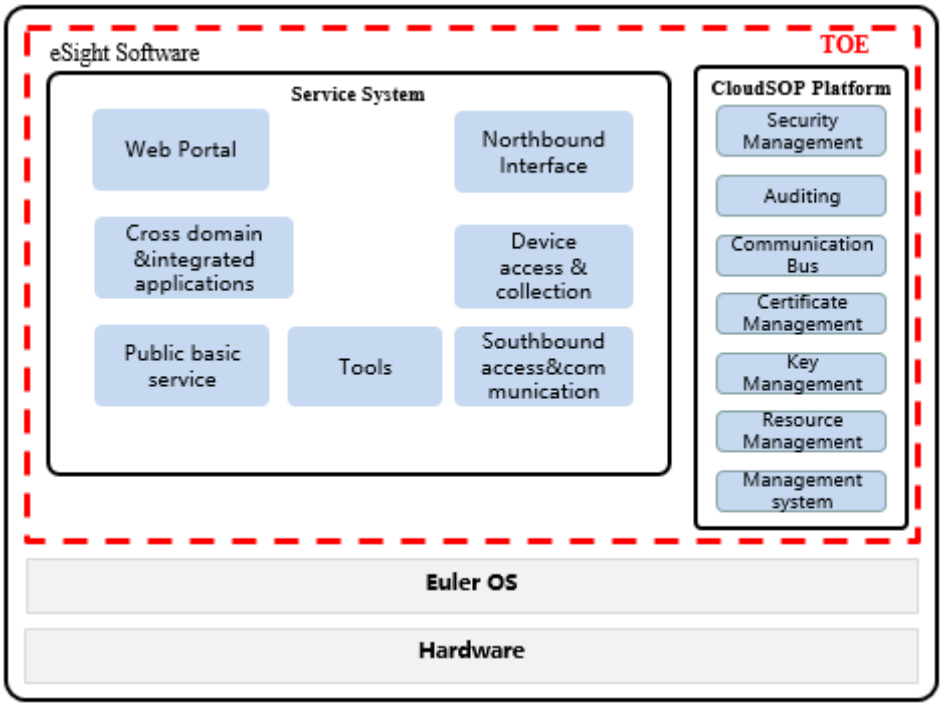
| Type | Name | Version | date |
|---|---|---|---|
| Operational user guidance | CC HUAWEI eSight 20.1 Product Documentation | 09 | 2022-01-14 |
| | CC HUAWEI eSight 20.1.0 Security Management Guide | 1.3 | 2022-01-14 |
| Preparative procedures | CC HUAWEI eSight 20.1.0 Installation Guide | 1.1 | 2022-01-07 |

## 1.4.1.2 Logical Scope

eSight integrates functions such as network management, service control, and network analysis. The TOE boundary from a logical point of view is represented by the elements that are displayed in the red box in the figure below.

**Figure 1-5** TOE logical scope




The major security features of eSight that are subject to evaluation are:

## User Management

Both on the management and O&M plane, the TOE provides user management based on role management.On the management plane, it has the default user groups including **Administrators**, **SMManagers**，**Operators**，**Monitors.** On the O&M plane, it has the default user groups including **Administrators**, **SMManagers, NBI User Group**, **Monitor Group, Operator Group**，**HOFS Group.** It also defines user groups for different user roles. The TOE allows the administrator the ability to create custom roles both on the management and O&M plane.

## Authentication

The TOE authenticates all users who access the TOE by username and password. The TOE provides a local authentication mode both on the management plane and the O&M plane. The TOE optionally provides authentication decisions obtained from an external AAA in the IT environment on the O&M plane.

## Access Control

The TOE supports SMManagers to grant permissions to users by means of security management. Then users can access and perform operations on the TOE and NEs based on their permissions.

The TOE offers a feature access control list (ACL) based on IP addresses for controlling which terminals can access the TOE through the TOE client.

## Communication Security

The TOE supports encrypted transmission within the eSight server, between NEs and the eSight server, between a browser and the eSight server, and between an OSS and the eSight server.

## User Session Management

The TOE monitors and presents all online user sessions in real time. The TOE also provides session establishment, TSF-initiated session termination, user-initiated session termination.

## Auditing

The TOE generates audit records for security-relevant management and stores the records in the database.

Logs record routine maintenance events of the TOE. For security purposes, the TOE provides security logs and operation logs.

Security logs record operation events related to account management, such as modification of passwords and addition of accounts.

Operation logs record events related to system configurations, such as modification of IP addresses and addition of services.

The TOE provides a Syslog solution to resolve the problem of limited storage space. Both security logs and operation logs can be saved on an external Syslog server.

The query and filter functions are provided on the GUI, which allow authorized users to inspect audit logs.

## Security Management Functions

The TOE offers security management for all management aspects of the TOE. Security management includes not only authentication and access control management, but also management of security-related data consisting of configuration profiles and runtime parameters. Security management can be customized.

## Cryptographic Function

Cryptographic functions are dependencies required by security features. The TOE supports cryptographic algorithms as described in section 5.2.7 Cryptographic Support.

# 2 CC Conformance Claims

This ST is CC Part 2 conformant [CC] and CC Part 3 conformant [CC]. The CC version of [CC] is 3.1 Revision 5.

This ST is EAL4+ALC_FLR.2-conformant as defined in [CC] Part 3.

The methodology to be used for evaluation is CEM3.1 R5.

No conformance to a Protection Profile is claimed.

# 3 Security Problem Definition

## 3.1 Assumptions

**A.PhysicalProtection** The hardware that the TOE is running on is operated in a physically secure and well managed environment.

It is assumed that the software platform of the server that the TOE is running on (as listed in section 1.4.1 TOE Definition Scope) is protected against unauthorized physical access.

It is assumed that the database is protected against data file damage.

**A.NetworkSegregation** It is assumed that the network interface of the server and the TOE client will be accessed only through subnets where the TOE hosts are installed. The subnet is separate from public networks. Communications with the TOE server are performed through a firewall. See section 1.4.2 Environment for more information.

**A.AdministratorBehaviour** It is assumed that the super user **admin**, a user that belongs to the **SMManagers** and **Administrators** groups and the users of the underlying operating system will behave correctly and will not perform any harmful operation on the TOE.

**A.NTP** It is assumed that operating environment should provide an accurate time source, in order to ensure normal operations of the TOE server.

**A.NetworkElements** It is assumed that the managed network elements are trusted and can support the TLS /SNMPv3 /SSHv2 /SFTP connection with the TOE, and the private interface defined by Huawei.

**A.Components** It is assumed that the 3rd party components (like NTP server, SFTP server, AAA server, syslog server, SMS/SMTP server, and CA server) are considered trusted and will not attack the TOE and the communication to 3rd party components is under protection.

**A.TrustedPlatform** It is assumed that the platform like OS, DB, hardware used by the TOE is trusted, and is properly hardened by the Administrator.

## 3.2 Threats

The threats described in this chapter are addressed by the TOE.

## 3.2.1 Assets and Agents

| Asset | Description |
|---|---|
| TOE security function (TSF) data | The integrity and confidentiality of TSF data (such as user account information, passwords and audit records) should be protected against threat agents. |
| OM data | The confidentiality and integrity of the OM data of NEs (such as configuration data) should be protected against threat agents. |

| Agent | Description |
|---|---|
| Attacker | An external attacker, who is not a user of the TOE. |
| Eavesdropper | An eavesdropper, who has access to communication channels through which the OM and TSF data are transferred. |
| Unauthorized user | An unauthorized user of the TOE, who gains unauthorized access to the TOE. |

## 3.2.2 Threats Addressed by the TOE

### 3.2.2.1 T.UnauthenticatedAccess

| Threat: T.UnauthenticatedAccess | |
|---|---|
| Attack | An attacker who is not a user of the TOE, gains access to the TOE, modifies and compromises the confidentiality of the TSF and OM data. |
| Asset | TSF and OM data |
| Agent | An attacker |

### 3.2.2.2 T.UnauthorizedAccess

| Threat: T.UnauthorizedAccess | |
|---|---|
| Attack | An unauthorized user who gains unauthorized access to the TOE and compromises the confidentiality and integrity of the TSF and OM data. The user also performs unauthorized operations on NEs through the TOE. |
| Asset | TSF and OM data |
| Agent | An unauthorized user |

#### 3.2.2.3 T.Eavesdrop

| **Threat: T.Eavesdrop** | |
|---|---|
| Attack | An eavesdropper (remote attacker) in the management network served by the TOE, who is able to intercept, modify, or re-use information assets that are exchanged between the TOE and NEs, between the TOE client and server, and between the TOE server and OSS/3rd application client. |
| Asset | TSF and OM data |
| Agent | An eavesdropper |

# 4 Security Objectives

## 4.1 Security Objectives for the TOE

The following objectives must be met by the TOE:

1. **O.Communication** The TOE implements logical protection measures for network communication between the TOE and NEs from the operational environment, also for the network communication between the TOE and the OSS/3rd application.
2. **O.Authorization** The TOE authorizes different roles that can be assigned to administrators in order to restrict the functions available to individual administrators, including limitation to session establishment and to actions performed on NEs.

   (The TOE authorizes different roles that can be assigned to users in order to restrict the functions available to a specific user.)
3. **O.Authentication** The TOE authenticates users before access to data and security functions is granted. The TOE provides configurable system policies to restrict user session establishment.
4. **O.Audit** The TOE generates, stores and reviews audit records for security-relevant administrator actions.
5. **O.SecurityManagement** The TOE manages security functions that it provides.

## 4.2 Security Objectives for the Operational Environment

1. **OE.NetworkElements** The operational environment ensures that the trusted NEs support the TLS /SNMPv3/SSHv2/SFTP/HTTPS connection with the TOE and private interface defined by Huawei.
2. **OE.Physical** The TOE is protected against unauthorized physical access.
3. **OE.NetworkSegregation** The operational environment protects the network where the TOE hosts are installed by separating it from the application (or public) network. A firewall is installed between the TOE server and untrusted domain to filter unused communication ports.
4. **OE.Database** The operational environment protects the database against unauthorized physical access and data file damage.
5. **OE.AdministratorBehaviour** The super user **admin**, the users who belong to the **SMManagers** and **Administrators** groups and the users of the underlying operating system will behave correctly and will not perform any harmful operation on the TOE.

6. **OE.NTP** The operational environment provides an accurate time source, in order to ensure normal operations on the TOE server.
7. **OE.TrustedPlatform** The operation environment provides a trusted platform like OS, DB and hardware.
8. **OE.Components** The 3rd party components are considered trusted and will not attack the TOE. The administrator shall ensure the communication between the TOE and the NTP server, SFTP server, AAA server, syslog server, SMS/SMTP server, and CA server is secured when these servers are used.

# 4.3 Security Objectives Rationale

## 4.3.1 Coverage

The following table provides a mapping of security objectives for the TOE to threats, showing that each security objective is at least covered by one threat.

| Security Objective for the TOE | Threat |
|---|---|
| O.Communication | T.Eavesdrop |
| O.Authentication | T.UnauthenticatedAccess and T.UnauthorizedAccess |
| O.Authorization | T.UnauthorizedAccess |
| O.Audit | T.UnauthorizedAccess and T.UnauthenticatedAccess |
| O.SecurityManagement | T.UnauthenticatedAccess, T.UnauthorizedAccess and T.Eavesdrop |

The following table provides a mapping of security objectives for the operational environment to assumptions and threats, showing that each security objective for the operational environment is at least covered by one assumption or threat.

| Security Objective for the Operational Environment | Threat / Assumption |
|---|---|
| OE.NetworkElements | T.Eavesdrop<br>A.NetworkElements |
| OE.Physical | A.PhysicalProtection<br>T.UnauthenticatedAccess |
| OE.NetworkSegregation | A.NetworkSegregation |
| OE.Database | A.PhysicalProtection<br>T.UnauthenticatedAccess<br>T.UnauthorizedAccess |
| OE. AdministratorBehaviour | A.AdministratorBehaviour |

| Security Objective for the Operational Environment | Threat / Assumption |
|---|---|
| OE.NTP | A.NTP |
| OE.TrustedPlatform | A.TrustedPlatform |
| OE.Componets | A.Components |

## 4.3.2 Sufficiency

The following rationale justifies that security objectives can counter each individual threat and that the achievement of each security objective can contribute to the removal, diminishing or mitigation of a specific threat:

| Threat | Rationale for Security Objectives |
|---|---|
| T.UnauthenticatedAccess | The threat of unauthenticated access to the TOE is countered by requiring the TOE to implement an authentication mechanism for its users (O.Authentication).<br>Authentication mechanisms can be configured by users with sufficient permissions (O.SecurityManagement). The audit records record modification of usernames and passwords, user logins and logouts, login successes and failures (O. Audit).<br>And the threat is countered by requiring the system and database to implement an authentication mechanism for its users (OE.Physical and OE.Database). |
| T.UnauthorizedAccess | The threat of unauthorized access is countered by requiring the TOE to implement an access control mechanism checking the operations that may be performed on the TOE and NEs (O.Authorization). The threat is also countered by authenticating the users in the TOE (O.Authentication).<br>Access control mechanisms (including user levels and command levels) can be configured by users with sufficient permissions (O.SecurityManagement).<br>The threat is also countered by audit records showing that if someone indeed performs unauthorized operations, they can be traced to (O.Audit).<br>In addition, OE.Database ensures that user account data stored in the database will not be altered maliciously. |
| T.Eavesdrop | The threat of eavesdropping is countered by requiring security communications:<br>- Securing network communication between the portal and eSight server over SFTP/HTTPS (O.Communication).<br>- Over TLS/SNMPv3/SSHv2/SFTP between the eSight server and NEs (O.Communication and OE.NetworkElements).<br>- Over TLS/SNMPv3/SSHv2/SFTP/HTTPS between the |

| Threat | Rationale for Security Objectives |
|---|---|
| | eSight server and the OSS/3rd application client (O.Communication).<br>Management of secure communication channels can be performed by users with sufficient permissions (O.SecurityManagement). |

The following rationale justifies that security objectives for the operational environment can cover each individual assumption and that the achievement of each security objective can contribute to the consistency between a specific assumption and environment. If all security objectives for the operational environment are achieved, the intended usage is realized:

| Assumption | Rationale for Security Objectives |
|---|---|
| A.PhysicalProtection | The assumption that the TOE will be protected against unauthorized physical access is addressed by OE.Physical and OE.Database. |
| A.NetworkSegregation | The assumption that the TOE is not accessible through the application networks hosted by the networking device is addressed by OE.NetworkSegregation. |
| A.AdministratorBehaviour | The assumption that super user **admin** and the users who belong to the **SMManagers** and **Administrators** groups and the users of the underlying operating system will behave correctly and will not perform any harmful operation is addressed by OE.AdministratorBehaviour. |
| A.NTP | The assumption that the operational environment provides an accurate time source is addressed by OE.NTP |
| A.NetworkElements | The assumption that the managed network elements are trusted and support secure channel is addressed by OE.NetworkElements. |
| A.Components | The assumption that the 3rd party components are trusted and support secure channel is addressed by OE.Components. |
| A.TrustedPlatform | The assumption that the platform used by the TOE is trusted, and is properly hardened by **Administrators** is addressed by OE. TrustedPlatform. |

The following table provides a matrix of TOE objectives and threats.

| | T.Eavesdrop | T.UnauthenticatedAccess | T.UnauthorizedAccess |
|---|---|---|---|
| O.Communication | X | | |
| O.Authentication | | X | X |
| O.Authorization | | | X |

| | | | |
|---|---|---|---|
| O.Audit | | X | X |
| O.SecurityManagement | X | X | X |

# 5 Security Requirements for the TOE

## 5.1 Conventions

The following conventions are used for the completion of operations:

- Strikethrough indicates text removed as a refinement
- (Underlined text in parentheses) indicates additional text provided as a refinement.
- **Bold text** indicates the completion of an assignment.
- ***Italicized and bold text*** indicates the completion of a selection.
- Iteration/N indicates an element of the iteration, where N is the iteration number/character.

## 5.2 Security Requirements

### 5.2.1 Security Audit (FAU)

#### 5.2.1.1 FAU_GEN.1 Audit Data Generation

**FAU_GEN.1.1**

The TSF shall be able to generate an audit record of the following auditable events:

1. Start-up and shutdown of the audit functions;
2. All auditable events for the [***not specified***] level of audit; and
3. [**The following auditable events:**
   a. **User login and logout**
   b. **User account management**
      i. **Creating, deleting, and modifying user accounts**
      ii. **Changing user passwords, mobile numbers and email addresses**
      iii. **Granting access rights to user accounts**
   c. **User group (role) management**
      i. **Creating, deleting, and modifying user groups**
      ii. **Granting access rights to user groups**

d. **Security policy management**
   i. **Modifying password policies**
   ii. **Modifying user account policies**
e. **User session management**
   i. **Kicking out individual user sessions**
f. **ACL management**
   i. **Creating, deleting, and modifying ACLs**
   ii. **Specifying ACLs for individual user account.**
g. **Region, operation set and device set management**
h. **Audit log management**
i. **Certificate management**
j. **NE management**].

### FAU_GEN.1.2

The TSF shall records within each audit record at least the following information:

1. Date and time of the event, type of event, subject identity (if applicable), and the outcome (success or failure) of the event; and
2. For each audit event type, based on the auditable event definitions of the functional components included in the PP/ST, [**none**].

## 5.2.1.2 FAU_GEN.2 User Identity Association

### FAU_GEN.2.1

For audit events resulting from actions of identified users, the TSF shall be able to associate each auditable event with the identity of the user that caused the event.

## 5.2.1.3 FAU_SAR.1 Audit Review

### FAU_SAR.1.1

The TSF shall provide [**users attached to SMManagers, users with log query rights**] with the capability to read [**security logs, operation logs, system logs**] from the audit records.

### FAU_SAR.1.2

The TSF shall provide the audit records in a manner suitable for the user to interpret the information.

Application Note:

Operation rights required for querying and exporting logs vary based on log types.

| Log Type | Permission |
|---|---|
| Security logs generated by all users | Query Security Log |
| System logs | Query System Log |

| Log Type | Permission |
|---|---|
| Operation logs generated by all users | Query Operation Log |
| Operation logs generated by the current user | Query Personal Operation Log |

#### 5.2.1.4 FAU_SAR.2 Restricted Audit Review

##### FAU_SAR.2.1

The TSF shall prohibit all users read access to the audit records, except the users who have been granted explicit read-access.

#### 5.2.1.5 FAU_SAR.3 Selectable Audit Review

##### FAU_SAR.3.1

The TSF shall provide the ability to apply [**selection**] of audit data based on [**filter criteria of audit fields including start time, end time, operation, level, operator, terminal IP address, result, operation object and details**].

#### 5.2.1.6 FAU_STG.1 Protected Audit Trail Storage

##### FAU_STG.1.1

The TSF shall protect the stored audit records in the audit trail from unauthorized deletion.

##### FAU_STG.1.2

The TSF shall be able to [***prevent***] unauthorized modifications to the stored audit records in the audit trail.

#### 5.2.1.7 FAU_STG.3 Action in Case of Possible Audit Data Loss

##### FAU_STG.3.1

The TSF shall [**store audit records in the database and export them into files**] if the audit trail ~~exceeds~~ [**occupies over the default value of 80% of the database capacity and lasts for over the default duration of 45 days**].

### 5.2.2 User Data Protection (FDP)

#### 5.2.2.1 FDP_ACC.2 Completing Access Control

##### FDP_ACC.2.1

The TSF shall enforce the [**eSight access control policy**] on [**subjects: users; objects: NE attributes and System data; operation: query, create, modify, delete, start, and stop operations on the object**] and all operations among subjects and objects covered by SFP.

FDP_ACC.2.2 The TSF shall ensure that all operations between any subject controlled by the TSF and any object controlled by the TSF are covered by an access control SFP.

## 5.2.2.2 FDP_ACF.1 Security Attribute-Based Access Control

### FDP_ACF.1.1

The TSF shall enforce the [**eSight access control policy**] to objects based on the following: [

1. **Users and their following security attributes:**
   a. **User ID**
   b. **User type**
   c. **User role assignment**
2. **Objects, and their following security attributes:**
   a. **Device ID**

]

### FDP_ACF.1.4

The TSF shall explicitly deny access of subjects to objects based on the following additional rules: [**none**].

### FDP_ACF.1.3

The TSF shall explicitly authorize access of subjects to objects based on the following additional rules: [**none**].

### FDP_ACF.1.2

The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed: [

1. **Only authorized users are permitted access to operation.**
2. **Users can be configured with different user role to control the eSight access permission.**
3. **An operation set contains many operation rights that are assigned to specific user roles.**]

## 5.2.2.3 FDP_UIT.1 Data exchange integrity

### FDP_UIT.1.1

The TSF shall ~~enforce the [assignment: access control SFP(s) and/or information flow control SFP(s)] to~~ **[*transmit and receive*]** ~~user data~~ (certificate to/from CA server) in a manner protected from **[*modification, insertion*]** errors.

### FDP_UIT.1.2

The TSF shall be able to determine on receipt of ~~user data~~ (certificate to/from CA server), whether **[*modification, insertion*]** has occurred.

# 5.2.3 Identification and Authentication (FIA)

## 5.2.3.1 FIA_UID.2 User Identification Before Any Action

### FIA_UID.2.1

The TSF shall require each user to be successfully identified before allowing any other TSF-mediated actions on behalf of that user.

## 5.2.3.2 FIA_UAU.2 User Authentication Before Any Action

### FIA_UAU.2.1

The TSF shall require each user to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that user.

## 5.2.3.3 FIA_UAU.5 Multiple Authentication Mechanisms

### FIA_UAU.5.1

The TSF shall provide [**local, remote LDAP, remote RADIUS, CAS and SAML SSO capability**] to support user authentication.

FIA_UAU.5.2 The TSF shall authenticate any user's claimed identity according to the [

1. **When local authentication is enabled, user authentication is implemented by TOE itself.**
2. **When LDAP authentication is enabled, user authentication is implemented by a remote LDAP server.**
3. **When RADIUS authentication is enabled, user authentication is implemented by a remote RADIUS server.**
4. **When CAS or SAML SSO configuration is enabled, user authentication is implemented by the SSO server of the TOE, and the user can log into all trusted SSO clients of other TOE instances without being authenticated again after logging in to one of the trusted TOEs.**]

## 5.2.3.4 FIA_UAU.6 Re-authenticating

### FIA_UAU.6.1

The TSF shall re-authenticate the user under the conditions [**changing the password**].

## 5.2.3.5 FIA_UAU.7 Protected Authentication Feedback

### FIA_UAU.7.1

The TSF shall provide only [**an obscured feedback**] to the user while the authentication is in progress.

## 5.2.3.6 FIA_ATD.1 User Attribute Definition

### FIA_ATD.1.1

The TSF shall maintain the following list of security attributes belonging to individual users: [

1. **User ID**
2. **Username**
3. **Password**
4. **User type**
5. **Mobile number, optional**
6. **Email address, optional**
7. **Welcome message, optional**
8. **Account enable status**
9. **Login time policy**
10. **Client IP address policy**
11. **User role assignment**
12. **Maximum online sessions, optional**
13. **Account validity period (days), optional**
14. **The number of allowed login times, optional**
15. **Select the policy (Disable user, Delete user, Unlimited) if no login within a period (configurable days), optional**
16. **Auto-logout if no activity within configurable period, optional**
17. **Compulsory password renewal (Password validity period (days), In advance warning before password expires (days), Minimum password usage period (days)), optional**].

## 5.2.3.7 FIA_AFL.1 Authentication Failure Handling

### FIA_AFL.1.1

The TSF shall detect when [***an administrator configurable positive integer within [1, 99]***] unsuccessful authentication attempts occur related to [**consecutive failed logins**].

### FIA_AFL.1.2

When the defined number of unsuccessful authentication attempts has been [***met***], the TSF shall [**lock the user account or IP address for 30 minutes by default in accordance with the table below**].

| User roles | O&M Plane (by default) | Web Management (by default) |
|---|---|---|
| Admin (super user admin) | 10 minutes | 10 minutes |
| Administrators both on the management and O&M plane | 30 minutes | 30 minutes |
| SMManagers both on the management and O&M plane | 30 minutes | 30 minutes |

| | | |
|---|---|---|
| Monitors only on the management plane | | 30 minutes |
| Operators only on the management plane | | 30 minutes |
| | | |
| | | |

### 5.2.3.8 FIA_SOS.1 Verification of Secrets

#### FIA_SOS.1.1

The TSF shall provide a mechanism to verify that secrets meet: **[**

1. **Min. password length(8)**
2. **Min. system administrator password length(8)**
3. **Max. password length(32)**
4. **Configurable number of latest passwords that cannot be reused**
5. **Password repetition not allowed within configurable number of months**
6. **Min. password usage period (days) (10)**
7. **Password validity period (days)**
8. **Force logout upon password reset**
9. **Min. characters different between new and old passwords(3)**
10. **Min. number of letters**
11. **Min. number of uppercase letters**
12. **Min. number of lowercase letters**
13. **Min. number of digits**
14. **Min. number of special characters**
15. **Password that cannot contain spaces**
16. **Password that cannot contain its username in reverse order**
17. **Password that cannot be an increasing, decreasing, or interval sequence of digits or letters**
18. **Policy about max. consecutive characters used in both username and password**
19. **Policy that the password cannot contain repeated character sequences**
20. **Max. times a character can consecutively occur(2)**
21. **Password that cannot contain user's mobile number or email address**
22. **Password that cannot contain words in the uploaded password dictionary file or hacker language dictionary configured in the backend file]**

## 5.2.4 Security Management (FMT)

### 5.2.4.1 FMT_SMF.1 Specification of Management Functions

#### FMT_SMF.1.1

The TSF shall be capable of performing the following management functions: [

1. **Authentication mode configuration**

2. **User management**
3. **Role management**
4. **Account policy**
5. **Password policy**
6. **Audit log management**
7. **Certificate management**
8. **NE management**
9. **Client IP Address Policies (ACL)**
10. **Login time policy**
11. **Configuration of the time interval of user inactivity for terminating an interactive session**
12. **Command group management**
13. **Configuration of trusted channels for connecting to the external entities**

].

## 5.2.4.2 FMT_SMR.1 Security Roles

### FMT_SMR.1.1

The TSF shall maintain the roles: [

1. **Administrators** both on the management and O&M plane
2. **SMManagers** both on the management and O&M plane
3. **Monitors** only on the management plane
4. **Operators** only on the management plane
5. **NBI User Group** only on the O&M plane
6. **HOFS Group** only on the O&M plane
7. **Monitor Group** only on the O&M plane
8. **Operator Group** only on the O&M plane
9. **user-defined User Group** on the O&M plane].

FMT_SMR.1.2 The TSF shall be able to associate users with roles.

## 5.2.4.3 FMT_MOF.1 Management of Security Functions Behaviour

### FMT_MOF.1.1

The TSF shall restrict the ability to [***determine the behaviour of, disable, enable***] the functions [**all the security functions defined in FMT_SMF.1**] to [**users assigned with roles as defined in FMT_SMR.1 or with explicitly assigned security functions**].

Application Note:

The detail privilege of each role is defined in the following table:

| Role Name | Security Functions |
|---|---|
| Administrators | Certificate management |

| Role Name | Security Functions |
|---|---|
| | Command group management<br>NE management |
| SMManagers | Authentication mode configuration<br>User management<br>Role management<br>Account policy<br>Password policy<br>Audit log management<br>Client IP Address Policies (ACL)<br>Login time policy<br>Configuration of the time interval of user inactivity for terminating an interactive session |
| NBI User Group | Configuration of trusted channels for connecting to the external entities |
| HOFS Group | View File Info<br>Delete File<br>Put File<br>Download File |
| Monitor Group | Permission to query all features except Security Manager |
| Operator Group | NE Management<br>Command group management<br>Configuration of trusted channels for connecting to the external entities |
| user-defined User Group | Granted by SMManagers |

## 5.2.4.4 FMT_MTD.1 Management of TSF Data

### FMT_MTD.1.1

The TSF shall restrict the ability to [***query, modify, delete***] the [**certificates, private keys, and symmetric keys**] to [**Users assigned with roles as defined in FMT_SMR.1 or with explicitly assigned security functions**].

## 5.2.4.5 FMT_MSA.1 Management of Security Attributes

### FMT_MSA.1.1

The TSF shall enforce the [**eSight access control policy**] to restrict the ability to [***query, modify***] the security attributes [**all the security attributes defined in FDP_ACF.1 and**

**FIA_ATD.1**] to [**Users assigned with roles as defined in FMT_SMR.1 or with explicitly assigned security functions**].

#### 5.2.4.6 FMT_MSA.3 Static Attribute Initialization

##### FMT_MSA.3.1

The TSF shall enforce the [**eSight access control policy**] to provide [***restrictive***] default values for security attributes that are used to enforce the SFP.

##### FMT_MSA.3.2

The TSF shall allow [**Users assigned with roles as defined in FMT_SMR.1 or with explicitly assigned security functions**] to specify alternative initial values to override the default values when an object or information is created.

### 5.2.5 TOE Access (FTA)

#### 5.2.5.1 FTA_TSE.1 TOE Session Establishment

##### FTA_TSE.1.1

The TSF shall be able to deny session establishment based on [

**a. User identity (username and password)**

**b. Client IP address policies (IP address range for login)**

**c. Login time policies (limited time segment for account login)**

**d. User lock status and enablement status**

**e. Password validity period (days)**

**f. Maximum online sessions**

**g. System login mode**]

#### 5.2.5.2 FTA_SSL.3 TSF-initiated Termination

##### FTA_SSL.3.1

The TSF shall terminate an interactive session after an [**administrator-configured time interval, by default 30 minutes of user inactivity**].

#### 5.2.5.3 FTA_SSL.4 User-initiated Termination

##### FTA_SSL.4.1

The TSF shall allow user-initiated termination of the user's own interactive session.

#### 5.2.5.4 FTA_TAH.1 TOE Access History

##### FTA_TAH.1.1

Upon successful session establishment, the TSF shall display the [***date, time, location***] of the last successful session establishment to the user.

##### FTA_TAH.1.2

Upon successful session establishment, the TSF shall display the [***date, time, location***] of the last unsuccessful attempt to session establishment and the number of unsuccessful attempts since the last successful session establishment.

##### FTA_TAH.1.3

The TSF shall not erase the access history information from the user interface without giving the user an opportunity to review the information.

### 5.2.6 Trusted Path/Channels (FTP)

#### 5.2.6.1 FTP_TRP.1 Trusted Path

##### FTP_TRP.1.1

The TSF shall provide a communication path between itself and **[*remote*]** users that is logically distinct from other communication paths and provides assured identification of its end points and protection of the communicated data from **[*disclosure and modification*].**

##### FTP_TRP.1.2

The TSF shall permit **[*remote users*]** to initiate communication via the trusted path.

##### FTP_TRP.1.3

The TSF shall require the use of the trusted path for [***remote management***].

#### 5.2.6.2 FTP_ITC.1/External System Inter-TSF Trusted Channel

##### FTP_ITC.1.1

The TSF shall provide a communication channel between itself and another trusted IT product that is logically distinct from other communication channels and provides assured identification of its end points and protection of the channel data from modification or disclosure.

##### FTP_ITC.1.2

The TSF shall permit **[*the TSF and (the external system including the OSS and 3rd application)*]** to initiate communication via the trusted channel.

### FTP_ITC.1.3

The TSF shall initiate communication via the trusted channel for [**authentication, dumping audit logs, backing up NE Data and restoring NE data**].

## 5.2.6.3 FTP_ITC.1/NE Inter-TSF Trusted Channel

### FTP_ITC.1.1

The TSF shall provide a communication channel between itself and another trusted IT product that is logically distinct from other communication channels and provides assured identification of its end points and protection of the channel data from modification or disclosure.

### FTP_ITC.1.2

The TSF shall permit **[*the TSF and (*<u>**the** ***NEs)***</u>**]** to initiate communication via the trusted channel.

### FTP_ITC.1.3

The TSF shall initiate communication via the trusted channel for [**managing NE devices**].

# 5.2.7 Cryptographic Support (FCS)

## 5.2.7.1 FCS_CKM.1/AES Cryptographic Key Generation

### FCS_CKM.1.1

The TSF shall generate cryptographic keys in accordance with a specified cryptographic key generation algorithm **[PBKDF2]** and specified cryptographic key sizes **[256 bits]** that meet the following: **[RFC8018 chapter 5.2]**

## 5.2.7.2 FCS_CKM.4 Cryptographic Key Destruction

### FCS_CKM.4.1

The TSF shall destroy cryptographic keys in accordance with a specified cryptographic key destruction method **[overwriting with 0 in java or overwriting with 0 or 0xcc in python]** that meets the following: **[none]**.

## 5.2.7.3 FCS_COP.1/AES Cryptographic operation

### FCS_COP.1.1

The TSF shall perform **[symmetric de- and encryption]** in accordance with a specified cryptographic algorithm **[AES GCM Mode]** and cryptographic key sizes **[256 bits]** that meet the following: **[FIPS 197 chapter 5, NIST SP 800-38D chapter 6.2]**

### 5.2.7.4 FCS_COP.1/PBKDF2 Cryptographic Operation

#### FCS_COP.1.1

The TSF shall perform **[password hashing]** in accordance with a specified cryptographic algorithm **[PBKDF2 (SHA256)]** and cryptographic key sizes **[None]** that meet the following: **[RFC8018 chapter 5.2].**

# 5.3 Security Functional Requirements Rationale

## 5.3.1 Coverage

The following table provides a mapping of SFR to the security objectives, showing that each security functional requirement addresses at least one security objective.

| Security Functional Requirements | Objectives |
|---|---|
| FAU_GEN.1 | O.Audit |
| FAU_GEN.2 | O.Audit |
| FAU_SAR.1 | O.Audit |
| FAU_SAR.2 | O.Audit |
| FAU_SAR.3 | O.Audit |
| FAU_STG.1 | O.Audit |
| FAU_STG.3 | O.Audit |
| FDP_ACC.2 | O.Authorization |
| FDP_ACF.1 | O.Authorization |
| FDP_UIT.1 | O.Communication |
| FIA_UID.2 | O.Audit<br>O.Authentication<br>O.Authorization |
| FIA_UAU.2 | O.Authentication<br>O.Authorization |
| FIA_UAU.5 | O.Authentication<br>O.Authorization |
| FIA_UAU.6 | O.Authentication<br>O.Authorization |
| FIA_UAU.7 | O.Authentication |
| FIA_ATD.1 | O.Authentication<br>O.Authorization |

| Security Functional Requirements | Objectives |
|---|---|
| | O.SecurityManagement |
| FIA_AFL.1 | O.Authentication<br>O.Authorization |
| FIA_SOS.1 | O.Authentication<br>O.SecurityManagement |
| FMT_SMF.1 | O.Audit<br>O.Authentication<br>O.Authorization<br>O.Communication<br>O.SecurityManagement |
| FMT_SMR.1 | O.Authorization |
| FMT_MOF.1 | O.SecurityManagement |
| FMT_MTD.1 | O.SecurityManagement |
| FMT_MSA.1 | O.Authorization |
| FMT_MSA.3 | O.Authorization |
| FTA_TSE.1 | O. Authentication |
| FTA_SSL.3 | O.Authentication |
| FTA_SSL.4 | O.SecurityManagement |
| FTA_TAH.1 | O.Authentication |
| FTP_TRP.1 | O.Communication |
| FTP_ITC.1/ External System | O.Communication |
| FTP_ITC.1/NE | O.Communication |
| FCS_CKM.1/AES | O.SecurityManagement |
| FCS_CKM.4 | O.SecurityManagement |
| FCS_COP.1/AES | O.SecurityManagement |
| FCS_COP.1/PBKDF2 | O.Authentication<br>O.SecurityManagement |

## 5.3.2 Sufficiency

The following rationale provides justification for each security objective for the TOE, showing that the security functional requirements are suitable to meet and achieve the security objectives.

| Security objectives | Rationale |
|---|---|

| Security objectives | Rationale |
|---|---|
| O.Audit | The generation of audit records is implemented by (FAU_GEN.1). Audit records are supposed to include user identities (FAU_GEN.2) where applicable, which are supplied by the identification mechanism (FIA_UID.2). Audit records are stored in the database, and are filtered to read and search with conditions, and restricted audit review requires authorized users (FAU_SAR.1, FAU_SAR.2, FAU_SAR.3). Management functionality for the audit mechanism is spelled out in (FMT_SMF.1). The audit record is stored in the database, and exported into a file if the size of the audit record occupies over the configured maximum size (FAU_STG.1, FAU_STG.3). |
| O.Communication | Communication security is implemented by data integrity protection (FDP_UIT.1) between the TOE and CA server, and trusted channels, (FTP_ITC.1/External System, FTP_ITC.1/NE) between the TOE and external servers, and (FTP_TRP.1) between the TOE and web clients.<br>NE performance data bulk collection and backup and software update are implemented using secure channels. eSight communicates with NEs using secure channels to manage and monitor NEs, including network devices, WLAN devices, servers, storage devices, IVSs, microwave devices, and PON devices. (FTP_TRP.1)<br>Performance and inventory data are transmitted to the OSSs or third-party applications. (FTP_TRP.1)<br>The management function of configuring the trusted channel for NE communication is provided in (FMT_SMF.1). |
| O.Authentication | User authentication (including re-authentication) is implemented by (FIA_UAU.2, FIA_UAU.5, FIA_UAU.6) and supported by individual user identities in (FIA_UID.2). The necessary user attributes (passwords) are spelled out in (FIA_ATD.1). The authentication mechanism supports authentication failure handling (FIA_AFL.1), restrictions as to the validity of accounts for login (FTA_TSE.1), and a password policy (FIA_SOS.1). Management functionality is provided in (FMT_SMF.1). The TOE logs off sessions when they are inactive for a configured period of time (by default 30 minutes) (FTA_SSL.3). The session establishment shall be denied based on security attributes (FTA_TSE.1). Authentication feedback information is protected by (FIA_UAU.7). TOE shall display access history of the last successful and unsuccessful logins (FTA_TAH.1).<br>For password verification hash values of passwords are used which are generated using FCS_COP.1/PBKDF2.<br>The authentication mechanism for NBIs and NEs to connect to eSight is also implemented by FIA_UAU.2. |
| O.Authorization | The requirement for access control is spelled out in (FDP_ACC.2), and the access control policies are modeled in (FDP_ACF.1) for accessing the eSight server.<br>Unique user IDs are necessary for access control (FIA_UID.2), and user authentication (FIA_UAU.2, FIA_UAU.5). |

| Security objectives | Rationale |
|---|---|
| | User-related attributes are spelled out in (FIA_ATD.1). Access control is based on the definition of roles as subjects and functions as objects (FMT_SMR.1). Management functionality for the definition of access control policies is provided (FMT_MSA.1, FMT_MSA.3, FMT_SMF.1).<br>User re-authentication is implemented by (FIA_UAU.6)<br>If a user fails to log in to the system for multiple consecutive times, the locking policy for the account and IP address is executed (FIA_AFL.1). |
| O.SecurityManagement | Management functionality is provided in (FMT_SMF.1/FIA_ATD.1/FIA_SOS.1/FMT_SMF.1/FMT_MOF.1/FMT_MTD.1/FTA_SSL.4).<br>The AES algorithm is used to encrypt sensitive information such as users' mobile numbers and email addresses. (FCS_CKM.1/AES, FCS_CKM.4, FCS_COP.1/AES, FCS_COP.1/PBKDF2) |

The following table provides a matrix of SFRs and the security objectives.

| | O.Audit | O.Authorization | O.Authentication | O.Communication | O.SecurityManagement |
|---|---|---|---|---|---|
| FAU_GEN.1 | X | | | | |
| FAU_GEN.2 | X | | | | |
| FAU_SAR.1 | X | | | | |
| FAU_SAR.2 | X | | | | |
| FAU_SAR.3 | X | | | | |
| FAU_STG.1 | X | | | | |
| FAU_STG.3 | X | | | | |
| FDP_ACC.2 | | X | | | |
| FDP_ACF.1 | | X | | | |
| FDP_UIT.1 | | | | X | |
| FIA_UID.2 | X | X | X | | |
| FIA_UAU.2 | | X | X | | |
| FIA_UAU.5 | | X | X | | |
| FIA_UAU.6 | | X | X | | |
| FIA_UAU.7 | | | X | | |
| FIA_ATD.1 | | X | X | | X |

| | O.Audit | O.Authorization | O.Authentication | O.Communication | O.SecurityManagement |
|---|---|---|---|---|---|
| FIA_AFL.1 | | X | X | | |
| FIA_SOS.1 | | | X | | X |
| FMT_SMF.1 | X | X | X | X | X |
| FMT_SMR.1 | | X | | | |
| FMT_MOF.1 | | | | | X |
| FMT_MTD.1 | | | | | X |
| FMT_MSA.1 | | X | | | |
| FMT_MSA.3 | | X | | | |
| FTA_TSE.1 | | | X | | |
| FTA_SSL.3 | | | X | | |
| FTA_SSL.4 | | | | | X |
| FTA_TAH.1 | | | X | | |
| FTP_ITC.1/External System | | | | X | |
| FTP_ITC.1/NE | | | | X | |
| FCS_CKM.1/AES | | | | | X |
| FCS_CKM.4 | | | | | X |
| FCS_COP.1/AES | | | | | X |
| FCS_COP.1/PBKDF2 | | | X | | X |

## 5.3.3 Security Requirements Dependency Rationale

Dependencies within the EAL4 package selected for the security assurance requirements have been considered by the authors of CC Part 3 and are not analyzed here again.

The security functional requirements in this Security Target do not introduce dependencies on any security assurance requirement; neither do the security assurance requirements in this Security Target introduce dependencies on any security functional requirement.

The following table demonstrates the dependencies of SFRs modeled in CC Part 2 and how the SFRs for the TOE resolve those dependencies.

| Security Functional Requirement | Dependencies | Resolution |
|---|---|---|

| Security Functional Requirement | Dependencies | Resolution |
|---|---|---|
| FAU_GEN.1 | FPT_STM.1 | Resolved by external time source.<br>The audit time depends on the reliable time stamp. Reliable time stamp depends on external time sources |
| FAU_GEN.2 | FAU_GEN.1<br>FIA_UID.1 | FAU_GEN.1<br>FIA_UID.2 |
| FAU_STG.1 | FAU_GEN.1 | FAU_GEN.1 |
| FAU_STG.3 | FAU_STG.1 | FAU_STG.1 |
| FAU_SAR.1 | FAU_GEN.1 | FAU_GEN.1 |
| FAU_SAR.2 | FAU_SAR.1 | FAU_SAR.1 |
| FAU_SAR.3 | FAU_SAR.1 | FAU_SAR.1 |
| FDP_ACC.2 | FDP_ACF.1 | FDP_ACF.1 |
| FDP_ACF.1 | FDP_ACC.1<br>FMT_MSA.3 | FDP_ACC.2<br>FMT_MSA.3 |
| FDP_UIT.1 | [FDP_ACC.1, or FDP_IFC.1], [FTP_ITC.1, or FTP_TRP.1] | FDP_ACC.2 and FDP_IFC.1 are not applicable because there is no access control or information flow control enforced.<br>FTP_ITC.1 and FTP_TRP.1 are not applicable because there is no confidentiality issue and no trusted path. |
| FIA_UID.2 | None | None |
| FIA_UAU.2 | FIA_UID.1 | FIA_UID.2 |
| FIA_UAU.5 | None | None |
| FIA_UAU.6 | None | None |
| FIA_UAU.7 | FIA_UAU.1 | FIA_UAU.2 |
| FIA_ATD.1 | None | None |
| FIA_AFL.1 | FIA_UAU.1 | FIA_UAU.2 |
| FIA_SOS.1 | None | None |

| Security Functional Requirement | Dependencies | Resolution |
|---|---|---|
| FMT_SMF.1 | None | None |
| FMT_SMR.1 | FIA_UID.1 | FIA_UID.2 |
| FMT_MOF.1 | FMT_SMR.1<br>FMT_SMF.1 | FMT_SMR.1<br>FMT_SMF.1 |
| FMT_MTD.1 | FMT_SMR.1<br>FMT_SMF.1 | FMT_SMR.1<br>FMT_SMF.1 |
| FMT_MSA.1 | [FDP_ACC.1 or FDP_IFC.1]<br>FMT_SMR.1<br>FMT_SMF.1 | FDP_ACC.2<br>FMT_SMR.1<br>FMT_SMF.1 |
| FMT_MSA.3 | FMT_MSA.1<br>FMT_SMR.1 | FMT_MSA.1<br>FMT_SMR.1 |
| FTA_TSE.1 | None | None |
| FTA_SSL.3 | None | None |
| FTA_SSL.4 | None | None |
| FTA_TAH.1 | None | None |
| FTP_TRP.1 | None | None |
| FTP_ITC.1/ External System | None | None |
| FTP_ITC.1/NE | None | None |
| FCS_CKM.1/AES | [FCS_CKM.2, or FCS_COP.1]<br>FCS_CKM.4 | FCS_COP.1<br>FCS_CKM.4 |
| FCS_CKM.4 | [FDP_ITC.1, or FDP_ITC.2, or FCS_CKM.1] | FCS_CKM.1 |
| FCS_COP.1/PBKDF2 | [FDP_ITC.1, or FDP_ITC.2, or FCS_CKM.1]<br>FCS_CKM.4 | PBKDF2 is a hash algorithm with no key. |

# 5.4 Security Assurance Requirements

The security assurance requirements for the TOE are the Evaluation Assurance Level 4 components as specified in [CC] Part 3. The following table provides an overview of the assurance components that form the assurance level for the TOE.

| Assurance class | Assurance components |
|---|---|
| ADV: Development | ADV_ARC.1 Security architecture description |
| | ADV_FSP.4 Complete functional specification |
| | ADV_IMP.1 Implementation representation of the TSF |
| | ADV_TDS.3 Basic modular design |
| AGD: Guidance documents | AGD_OPE.1 Operational user guidance |
| | AGD_PRE.1 Preparative procedures |
| ALC: Life-cycle support | ALC_CMC.4 Production support, acceptance procedures and automation |
| | ALC_CMS.4 Problem tracking CM coverage |
| | ALC_DEL.1 Delivery procedures |
| | ALC_DVS.1 Identification of security measures |
| | ALC_LCD.1 Developer defined life-cycle model |
| | ALC_TAT.1 Well-defined development tools |
| | ALC_FLR.2 Flaw reporting procedures |
| ASE: Security Target evaluation | ASE_CCL.1 Conformance claims |
| | ASE_ECD.1 Extended components definition |
| | ASE_INT.1 ST introduction |
| | ASE_REQ.2 Derived security requirements |
| | ASE_SPD.1 Security problem definition |
| | ASE_OBJ.2 Security objectives |
| | ASE_TSS.1 TOE summary specification |
| ATE: Tests | ATE_COV.2 Analysis of coverage |
| | ATE_DPT.1 Testing: basic design |
| | ATE_FUN.1 Functional testing |
| | ATE_IND.2 Independent testing - sample |
| AVA: Vulnerability assessment | AVA_VAN.3 Focused vulnerability analysis |

# 5.5 Security Assurance Requirements Rationale

The evaluation assurance level has been commensurate with the threat environment that is experienced by typical consumers of the TOE.

# 6 TOE Summary Specification

## 6.1 TOE Security Functionality

### 6.1.1 User Management

The TOE supports user management. User management involves user permission management, region management, and user maintenance and monitoring. User management grants permissions to users with different responsibilities, and adjusts the permissions based on service changes. This ensures that users have the necessary permissions to perform tasks and that other management tasks are carried out in order, avoiding unauthorized and insecure operations.

Security administrators can create roles, assign operation rights to the roles, and attach users to roles to grant them corresponding operation rights based on service requirements. This implements quick user authorization, improving O&M efficiency.

The management plane is responsible for managing products, such as installation, deployment, upgrade, and backup and restoration. The management plane does not manage NEs. Therefore, the management plane provides only application permissions. The role Administrators is to administer the TOE, the role SMManagers is the security role of the TOE, who can complete security management of TSF data, user management, audit review and authorization.

On the O&M plane, to improve management efficiency, security administrators divide the network into regions based on service requirements and allow different personnel to manage users and services in different regions. The role Administrators is to administer the TOE, the role SMManagers is the security role of the TOE, who can complete security management of TSF data, user management, audit review and authorization.

On every plane, there is a default and super user admin. The super user admin can complete all the functions, including security and administrative functions. During user permission maintenance period, security administrators can view and modify user, role, user group, and operation set information, and monitor user sessions and operations in real time, ensuring system security.

(FMT_MSA.1, FMT_MSA.3, FMT_SMF.1, and FMT_SMR.1)

The default roles on the management plane are listed in the table below.

| Role Name | Description |
|---|---|
| Administrators | The user group has all the permissions except user management, query security log, query personal security log and view online |

| Role Name | Description |
|---|---|
| | users. |
| SMManagers | The user group has permission to manage users, manage licenses, query security logs, view online users, and update ACL policies. |
| Monitors | The user group has permission to monitor non-security operations of backup and restore, deployment, system monitoring, maintenance, system settings, alarms, the disaster recovery (DR) system, product planning, trace server product tool, configure NAT tool, information collection, trouble shooting, emergency system, cloud service management, infrastructure, commissioning wizard, etc. |
| Operators | The user group has permission to perform non-security operations of backup and restore, deployment, system monitoring, maintenance, system settings, alarms, the disaster recovery (DR) system, product planning, trace server product tool, configure NAT tool, information collection, trouble shooting, emergency system, cloud service management, infrastructure, commissioning wizard, etc. |

The default roles on the O&M plane are listed in the table below.

| Role Name | Description |
|---|---|
| Administrators | The user group has all the permissions except **User Management**, **Query Security Log**, **View Online Users**, and **Query Personal Security Log**. |
| SMManagers | The user group has the **User Management**, **License Manager**, **View Online Users**, and **Query Security Log** permissions. |
| NBI User Group | The user group has the permission to configure the northbound interfaces such as SNMP, CORBA, XML, TEXT and RESTful NBIs. |
| HOFS Group | The user group has the **File Management Operation Set** permission. |
| Monitor Group | The user group has the permission to query all features except Security Manager |
| Operator Group | The user group has the permission to query and modify all features except Security Manager |
| user-defined User Group | Granted by SMManagers |

## 6.1.2 Authentication

The TOE identifies administrators by a unique ID and enforces their authentication before granting them access to any TSF management interfaces.

The TOE authenticates users based on the user attributes defined in FIA_ATD.1. The passwords should meet the defined password policy; otherwise the input of password shall be refused. When a user uses an expired password for login, the system will refuse the login request, the user must request the administrator to reset the password (the administrator can deactivate the password expiration policy).

The TOE shall verify that the password meets the following password policies: [

1. Min. password length**(8)**
2. Max. system administrator password length**(8)**
3. Max. password length**(32)**
4. Configurable number of latest passwords that cannot be reused
5. Password repetition not allowed within the configurable number of months
6. Min. password usage period (days) **(10)**
7. Password validity period (days)
8. Force logout upon password reset
9. Min. characters different between new & old passwords**(3)**
10. Min. number of letters
11. Min. number of uppercase letters
12. Min. number of lowercase letters
13. Min. number of digits
14. Min. number of special characters
15. Password that cannot contain spaces
16. Password that cannot contain its username in reverse order
17. Password that cannot be an increasing, decreasing, or interval sequence of digits or letters
18. Policy about max. consecutive characters used in both the username and password
19. Policy that the password cannot contain repeated character sequences
20. Max. times a character can consecutively occur**(2)**
21. Password that cannot contain user's mobile number or email address
22. Password that cannot contain words in the password dictionary or hacker language dictionary]

    Advanced parameters have such as Min. Different characters between new and old passwords, Min. Letter, Min. Lowercase, Min. Numbers.

User IDs are unique within the TOE and are stored together with associated passwords and other attributes including extended security attributes in the TOE's configuration database. If the user is in the disabled status, the login will be refused.

Authentication based on security attributes is enforced prior to any other interaction with the TOE for all interfaces of the TOE.

If you enter the password for the admin user incorrectly for five consecutive times within 10 minutes, the client IP address will be locked for 10 minutes.

The TOE supports the account and IP address lockout policy on the **Account Policy** page. The default account lockout policy is that when you enter the password incorrectly for 5 consecutive times within 10 minutes, the account will be locked for 30 minutes and automatically unlocked afterwards. The default IP address lockout policy is that when you enter the password incorrectly for 10 consecutive times within 1 minute, the IP address will be

locked for 30 minutes and automatically unlocked afterwards. If three accounts using a client IP address are locked within 10 minutes, this client IP address will be locked for 30 minutes.

All users can log in to the O&M plane again after the lockout period expires. Local users can also contact security administrators to unlock their accounts for re-login.

(FIA_AFL.1, FIA_ATD.1, FIA_SOS.1, FIA_UAU.2, FIA_UAU.7, FIA_UID.2, FTA_TSE.1).

The management plane only supports local authentication, and don't need to support SSO. On the O&M plane, the user authentication modes include local authentication and remote authentication. In remote authentication mode, users are authenticated by an AAA server through AAA protocols. The O&M plane supports Lightweight Directory Access Protocol (LDAP) and Remote Authentication Dial In User Service (RADIUS) for AAA authentication. The O&M plane supports CAS and SAML SSO. SSO configuration allows users to access multiple mutually trusted application systems after only one login authentication. For supporting the SAML SSO, the O&M plane can be SP or IdP.(FIA_UAU.5).

The TOE can re-authenticate the user under the condition of changing passwords (FIA_UAU.6).

The TOE displays the asterisk (*) that has the same length as the entered password, and returns a username or password error when login failed (FIA_UAU.7).

## 6.1.3 Access Control

The TOE enforces an authorization policy by defining access rights that are assigned to users and roles by the **SMManagers** or the super user **admin**.

The TOE enforces the access control policy on users and groups as subjects, domains as objects, functional operations issued by subjects on objects. The domains as objects shall define the scope of NEs. Operations shall not be performed on NEs not contained in domains.

The access control is based on users or groups and objects; and the security attribute object ID of an object must have a domain, including the specified NE, device type, and NEs in the subnet.

The access control is used to identify all the operations over objects through the eSight client if the operation rights have been assigned by the **SMManagers** or the super user **admin** (identification and authentication of operation rights).

The TOE can offer an access control list (ACL) of features based on IP addresses for controlling which terminals can access the TOE through the TOE client. The ACL is based on IP addresses. The security role **SMManagers** and the super user **admin** can specify each individual IP address or IP address range in the ACL of a specified user ID. The user can log in to the TOE only from terminals whose IP addresses are in the ACL.

(FDP_ACC.2, FDP_ACF.1, FMT_SMR.1, FMT_MSA.1, FMT_SMF.1, FTA_TSE.1 and FMT_MSA.3)

## 6.1.4 Communication Security

The TOE supports encrypted transmission between NEs and the TOE, the external system and the TOE, remote user and the TOE. It provides secure protocols, such as TLS, SNMPv3, SSHv2 and SFTP, for data transmission.

Interactions between the NEAC secure protocols and other modules

| Module Code | AUDIT | CM | KM | ND | SRD | STD | VD | IVS | MD | BMO | PAR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NEAC | NEAC-AUDIT-I001 | NEAC-CM-I001 | NEAC-KM-I001 | NEAC-ND-I001 | NEAC-SRD-I001 | NEAC-STD-I001 | NEAC-VD-I001 | NEAC-IVS-I001 | NEAC-MD-I001 | NEAC-BMO-I001 | NEAC-PAR-I001 |
| | | | | ND-NEAC-I001 | SRD-NEAC-I001 | STD-NEAC-I001 | VD-NEAC-I001 | IVS-NEAC-I001 | MD-NEAC-I001 | BMO-NEAC-I001 | PAR-NEAC-I001 |
| SFTP | | | | √ | | | √ | √ | √ | | √ |
| HTTPS | | | | | √ | √ | √ | | | | √ |
| SNMP | | | | √ | √ | √ | √ | √ | √ | | √ |
| SSH | | | | √ | | √ | √ | | | | |

- Communication Security between NEs and the TOE:

  As a client, the TOE can initiate SNMPv3, SSHv2 and TLS connections to establish secure channels with the NEs.

  As a server, the TOE also provides secure channels for the communication with NEs to perform performance data bulk collection and software backup and update. The secure channels are based on TLS connections initiated by NEs.

- Communication Security between the external system and the TOE:

  As a client, the TOE can establish secure channels with the external system (like AAA server, syslog server) over TLS, SNMPv3, or SSH.

  As a client, the TOE can initiate SSH connections to establish secure channels with the OSS, 3rd application.

  As a server, the TOE can receive the TLS, HTTPS, and SNMPv3 connections initiated by the OSS, 3rd application to establish secure channels.

- Communication Security between remote users and the TOE:

  The remote users access eSight through web portal by initiating HTTPS connections.

(FTP_TRP.1, FTP_ITC.1/NE, FTP_ITC.1/ External System)

The TOE supports communicating with a CA server to apply the certificates. To prevent modification, insertion and replay, the communication uses CMPv2 protocol over an HTTP channel with RSA or ECDSA signature protection of the certificate. (FDP_UIT.1)

## 6.1.5 User Session Management

The TOE provides user session management. The function includes the following functions:

23. Session establishment

    The session will be established after successful login authentication. When more than three unsuccessful login attempts are detected since the last successful login, The TOE will generate an alarm. The session establishment will be denied based on the policy below (FTA.TSE.1).

    Upon successful session establishment, the TOE will display the welcome message, last successful login date, time and IP address, last unsuccessful login date, time and IP address, login failure times since last successful login (FTA_TAH.1).

24. TSF-initiated session Termination

    If a user does not perform any operation within the period of the default value 30 mins) specified by this parameter, the user will be logged out. The setting takes effect only for local and remote users and does not take effect for third-party users. If this parameter is set to Unlimited, user sessions will not be automatically logged off (FTA_SSL.3).

25. User-initiated session termination

    Login user can click the user name in the upper right corner of the page and choose Logout (FTA_SSL.4).

1. Users and their following security attributes:

a) Time segment for login, which means that the user shall log in to the TOE within a specific time segment.

b) ACL, addressed in the previous section.

c) Maximum online sessions, which indicates that the number of online sessions shall not exceed the maximum sessions, otherwise the user login requests after the maximum online sessions shall be refused by the TOE. The default is none.

d) Disabled status, which means the user cannot log in to the TOE in the disabled status.

2. System security policy, which is prior to the security attributes of individual users

a) System login mode, which supports the multi-user login mode and single-user login mode. During system operation and maintenance, the single-user mode is recommended to prevent other users from logging in to the system and performing operations that may affect O&M efficiency. When the single-user login mode is selected, the TOE refuses all login requests including those for online sessions except that of the super user **admin**. The multi-user login mode is a normal mode and has no special limits.

## 6.1.6 Auditing

The TOE can generate audit records for security-relevant events as described in FAU_GEN.1. The audit record has the following information: the activity name, level, user ID, operation type, operation date and time, terminal, object, operation result, and details.

The audit review can be implemented with filter criteria on the eSight client by users attached to SMManagers, users with log query rights. Any user cannot delete and modify the audit records.

Conditions for dumping logs: The number of logs in the database occupies over 1 million, the size of the logs in the database occupies over 80% of the capacity, or the number of days for storing the logs exceeds 45 days. To ensure sufficient database space, the system checks logs every hour and saves logs that meet the requirements to the hard disk of a server. Then the dumped logs are automatically deleted from the database.

Conditions for deleting log files: The size of the log files is greater than 1024 MB (default value), the log files are stored for more than 45 days (default value), or the total number of log

files exceeds 1000 (default value). To ensure sufficient disk space, the system checks log files every hour and deletes log files meeting the requirements from the hard disk.

By default, a maximum of 1 million logs can be stored in the database. If the database space of log management is greater than or equal to 16 GB. The logs that occupy over the maximum number of logs stored in the database will be dumped.

The values in the preceding log dump conditions are default values.

Log service start/stop of the O&M plane will be recorded in audit logs of the management plane. Log service start/stop of the management plane will be recorded in the /var/log/messages directory of the OS.

(FAU_GEN.1, FAU_GEN.2, FAU_SAR.1, FAU_SAR.2, FAU_SAR.3, FAU_STG.1, FAU_STG.3)

## 6.1.7 Security Management Function

The TOE provides security management if necessary. Only administrators have the privilege to manage the behaviors of TOE security functions. This is partially already addressed in more details in the previous sections of the TSS. It includes security attributes below.

1. Users and their following security attributes:
   a. User ID, which is a user identifier, defined as a username in the TOE.
   b. User Group, which is the same as a role definition.
   c. Password, which should meet the predefined password policy, is encrypted with PBKDF2 and stored in the database.
   d. Time segment for login, addressed in the previous section.
   e. ACL, addressed in the previous section.
   f. Maximum online sessions, addressed in the previous section.
   g. Disabled status, addressed in the previous section.
2. System security policy, which is prior to the security attributes of individual users
   a. System login mode, addressed in the previous section.
   b. Password policy, which has basic parameters and advanced parameters. Basic parameters include the following items: Min. Length of common user password, Min. Length of super user password, Max. Length of password, Max. Period for password repetition (months), Password validity period (days), Minimum validity period of the password (days), Number of days warning given before password expiry, The Password Cannot Be Similar to History Passwords. Advanced parameters include the following items: Min. Different characters between new and old passwords, Min. Letter, Min. Lowercase, Min. Numbers. Account policy, which has an upper threshold for legal login times and the excessive login attempts cause account locking. Super user **admin** is not allowed to be locked. All the users should meet the account policy defined in the TOE.

The TOE restricts the ability to *manage* the certificates, private keys, and symmetric keys to SMManagers and users with sufficient user permissions.

(FMT_MSA.1, FMT_MSA.3, FMT_SMF.1, FMT_MOF.1, FMT_MTD.1)

## 6.1.8 Cryptographic Functions

Cryptographic functions are required by security features as dependencies. The following cryptographic algorithms are supported:

1. The TOE supports symmetric encryption and decryption using the AES-256-GCM algorithm to protect sensitive data. (FCS_COP.1/AES).
2. The TOE shall release the cryptographic key memory by overwriting with 0 in java or overwriting with 0 or 0xcc in python if the key is no longer used (FCS_CKM.4).
3. The TOE supports a three-layer key management structure of root key, master key and working key. The root key is generated by PBKDF2 (HMACSHA2) algorithm from root key materials. The master key is generated with a 64-byte random number obtained from the TOE's deterministic random number, the master key is encrypted and protected by the root key. The working key is generated by PBKDF2 (HMACSHA2) algorithm from master key materials, the working key is encrypted and protected by the master key, the working key is used to provide confidential and complete protection for sensitive data saved in a local PC or data transferred through insecure channels. Both the two keys can be updated manually (FCS_CKM.1/AES).
4. The TOE supports hashing of data using PBKDF2 (SHA256) algorithm according to [RFC8018] for password hashing. The iteration number is at least 10,000 times. The salt used in PBKDF2 is a 32-byte random number obtained from the TOE's deterministic random number generator (FCS_COP.1/PBKDF2).

# 7 Abbreviations, Terminology and References ( ALL )

## 7.1 Abbreviations

| | |
|---|---|
| CC | Common Criteria |
| ST | Security Target |
| TOE | Target of Evaluation |
| TSF | TOE Security Functions |
| PP | Protection Profile |
| SFR | Security Functional Requirement |
| OM | Operation and Maintenance |
| NE | Network Element |
| OSS | Operations Support System |
| AAA | Authentication Authorization Accounting |
| NTP | Network Time Protocol |
| BSS | Business Support System |
| SOP | Standard Operation Procedure |
| SDN | Software-defined Networking |
| CA | Certificate Authority |
| CAS | Central Authentication Service |
| SSO | Single Sign-on |
| CMP | Certificate Management Protocol |
| SAML | Security Assertion Markup Language |

| | |
|---|---|
| SP | Service Provider |
| IdP | Identity Provider |

# 7.2 Terminology

This section contains definitions of technical terms that are used with a meaning specific to this document. Terms defined in the [CC] are not reiterated here, unless stated otherwise.

| Terminology | Explanation |
|---|---|
| Administrator | An administrator is a user of the TOE who may have been assigned specific administrative privileges within the TOE. This ST may use the term administrator occasionally in an informal context, and not in order to refer to a specific role definition. From the TOE's point of view, an administrator is simply a user who is authorized to perform certain administrative actions on the TOE and the objects managed by the TOE. |
| Operator | See User. |
| User | A user is a human or a product/application using the TOE. |
| Access Network | In telecommunications, an access network is a network that connects subscribers to telecommunication service providers over public ground. It can be considered the route between the subscriber's home and the ISP itself. The access network is composed of the carrier's station and the end user. |
| OM data | Data user for system operation and maintenance. |

# 7.3 References

[CC] Common Criteria for Information Technology Security Evaluation. Part 1-3. September 2019. Version 3.1 Revision 5.

[CEM] Common Methodology for Information Technology Security Evaluation. September 2012. Version 3.1 Revision 5.